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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/698,472	11/03/2003	Hiroshi Ogiwara	1075.1235	3203
21171	7590	09/06/2005	EXAMINER	
STAAS & HALSEY LLP			DIACOU, ARI M	
SUITE 700			ART UNIT	
1201 NEW YORK AVENUE, N.W.			PAPER NUMBER	
WASHINGTON, DC 20005			3663	

DATE MAILED: 09/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/698,472

Applicant(s)

OGIWARA ET AL.

Examiner

Ari M. Diacou

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 May 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>03 November 2003</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Specification

1. 35 U.S.C. 112, first paragraph, requires the specification to be written in "full, clear, concise, and exact terms." The specification is replete with terms which are not clear, concise and exact. The specification should be revised carefully in order to comply with 35 U.S.C. 112, first paragraph. Examples of some unclear, inexact or verbose terms used in the specification are:

- Regarding [¶ 0026] "Raman amplification medium to further amplify the main signal light beam, and a pumping light introducing means introducing a part or all of the pumping light beam at the specific wavelength of the pumping light beams from the counterpropagating pumping sources as a pumping light beam for the rare-earth-doped optical amplification medium to the rare-earth-doped optical amplification medium, and transmitting at least the pumping light beam at the specific wavelength from the copropagating pumping source as another pumping light beam for the rare-earth-doped optical amplification medium." In this case it is unclear which beams of light are going through which apparatus.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

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The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

- Regarding claims 1 and 11 which read on [¶ 0026], it is unclear which beams of light are going through which apparatus.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- Regarding claims 2 and 12, the use of the modifier "type" renders the claim(s) indefinite because the claim(s) include(s) elements not actually disclosed (those encompassed by "type"), thereby rendering the scope of the claim(s) unascertainable. See MPEP § 2173.05(b).

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- The claims are generally narrative and indefinite, failing to conform with current U.S. practice. They appear to be a literal translation into English from a foreign document and are replete with grammatical and idiomatic errors.
- Regarding claims 1, 3, 6, 8, 11, 13, 16, and 18 it is unclear what frequency of light is traveling to which structural element.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1 and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Friedrich (USP No. 6466362).

Regarding claim 1, Friedrich discloses an optical amplifying apparatus comprising:

- a plurality of pumping sources *generating pumping light beams at different wavelengths*; [Fig. 1, #40] [Col. 3, lines 52-58]
- a Raman amplification medium *receiving the pumping light beams from said pumping sources to amplify a main signal light beam by using stimulated Raman scattering phenomenon due to said pumping light beams*; [Fig. 1, #5] [Col. 3, lines 52-58]

- a rare-earth-doped optical amplification medium *receiving said main signal light beam amplified by said Raman amplification medium to further amplify said main signal light beam*; [Fig. 1, #10] [Col. 3, lines 40-48] and
- a pumping light introducing means introducing a part or all of a pumping light beam at a specific wavelength of said pumping light beams as a pumping light beam for said rare-earth-doped optical amplification medium to said rare-earth-doped optical amplification medium. [This feature, usually a coupler is well known to be inherent to an EDFA and never represented in a drawing where a triangle represents an EDFA.]

Regarding claim 5, Friedrich discloses an optical amplifying apparatus comprising: the optical amplifying apparatus according to claim 1, wherein said pumping light introducing means is an optical coupler disposed between said Raman amplification medium and said rare-earth-doped optical amplification medium *to split said pumping light beam at said specific wavelength, introducing a part of said pumping light beam at said specific wavelength to said rare-earth-doped optical amplification medium, and introducing a rest of said pumping light beam to said Raman amplification medium*. [Couplers are inherent to the design of EDFA's and are typically put between the main signal input and the EDF, in this case placing it between the Raman amplification fiber and the rare-earth doped fiber.]

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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11. As it is best understood by the examiner, claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Griseri et al. (USP No. 6867905) in view of Friedrich. Griseri discloses a hybrid optical amplifier [Fig. 1, #110] [Col. 3, lines 43-55] including a Raman amplifier [Fig. 1, #115] that is pumped by counter-propagating signals (and a co-propagating mode which has the same frequency as one of the counter-propagating modes) and a rare-earth doped fiber amplifier [Fig. 1, #112] that further amplifies the signal after Raman amplification. Griseri fails to teach the use of multiple counter-propagating pumps, but Friedrich does teach the use of multiple counter-propagating pumps for use in a hybrid optical amplifier [Fig. 1, #40]. Therefore, it would have been obvious to one skilled in the art (e.g. an optical engineer) at the time the invention was made, to create a hybrid optical amplifier with a single co-propagating Raman pumping mode and a plurality of counter-propagating Raman pumping modes, one of which has the same frequency as the co-propagating modes, for the advantage of increased bandwidth.

12. As it is best understood by the examiner, claims 12 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Griseri in view of Friedrich as applied to claim 11 above further in view of Hecht. Claims 2 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Griseri in view of Friedrich as applied to claim 1 above further in view of Hecht. Together the teachings of Friedrich and Griseri make obvious the inventions with all the limitations of claims 1 and 11. Hecht teaches that couplers must always be used when multiplexing two signals of different wavelengths [Pg. 211].

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Therefore, it would have been obvious to one skilled in the art (e.g. an optical engineer) at the time the invention was made, to include a wavelength specific coupler to allow main signal modes to pass from the Raman fiber to the EDFA while allowing pump light to be introduced into the Raman fiber, for the advantages specific to couplers and fiber gratings known in the art.

13. As best as it is understood by the examiner, claims 3, 6, 8, 13, 16, and 18 are taken to mean the coupler allows a optical signal with a wavelength λ_s to pass through, as well as a pump light with a wavelength λ_p to be introduced into the fiber, wherein $\lambda_s > \lambda_p$. Therefore, claims 3, 6, 8, 13, 16, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Griseri in view of Friedrich and Hecht as applied to claims 1, 2, 5, 11, 12, and 15 above. The claimed requirement on couplers is inherent to EDFA's which must be pumped with radiation of 980 nm or 1480 nm, which get introduced to a fiber carrying radiation of 1550 nm to be amplified. Therefore, it would have been obvious to one skilled in the art (e.g. an optical engineer) at the time the invention was made, to include a coupler with the requirements as understood by the examiner, because they are inherent to an EDFA.

14. As best as it is understood by the examiner, claims 4, 7, 9, 10, 14, 17, 19, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over as applied to above, further in view of Kikuchi (USP No. 6891659). Griseri, Friedrich and Hecht are silent on the matter of modulating the pumping signal with the information contained in the OSC

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signal, but Kikuchi teaches the use of pump modulation for the purpose of transmitting information between optical nodes [Col. 28, lines 9-23]. Therefore, it would have been obvious to one skilled in the art (e.g. an optical engineer) at the time the invention was made, to modulate an OSC signal in the pump light of a hybrid optical amplifier, for the purpose of material efficacy.

15. While patent drawings are not drawn to scale, relationships clearly shown in the drawings of a reference patent cannot be disregarded in determining the patentability of claims. See In re Mraz, 59 CCPA 866, 455 F.2d 1069, 173 USPQ 25 (1972).

Conclusion

16. The prior art which is cited but not relied upon is considered pertinent to applicant's disclosure.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ari M. Diacou whose telephone number is (571) 272-5591. The examiner can normally be reached on Monday - Friday, 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on (571) 272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AMD 9-1-2005


JACK KEITH
PRIMARY EXAMINER
SP-3663